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Defence Nuclear Organisation

Corporate report

Defence Nuclear Enterprise 2025 Annual Update to Parliament

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Foreword from the Secretary of State

Last year, this government made clear in our manifesto that we would reinforce our commitment to the nuclear deterrent with a triple lock. The triple lock guarantees: (i) the building of the four Dreadnought nuclear submarines in Barrow; (ii) that we will maintain the UK's Continuous At-Sea Deterrent (CASD) 24 hours a day, 365 days a year; and (iii) the delivery of all future upgrades to ensure the safety and effectiveness of our deterrent.

The triple lock recognises the critical role that the nuclear deterrent plays in the safety and security of the UK. For over fifty years, CASD has been the bedrock of our national security, protecting the UK and our NATO Allies against the most extreme threats to our way of life. The Prime Minister is steadfast in our absolute commitment to the nuclear deterrent in the face of rising global threats and growing Russian aggression. The importance of this has become even more apparent with the continuing uncertainty and conflict in Europe, demonstrating why a strong NATO and a strong nuclear deterrent are vital.

This year, we are going further to ensure the UK is safer and more secure. Recognising that we are in a profound period of change, this government has committed to an increase of defence spending. From 2027, we will be spending 2.5% of GDP on defence and the Prime Minister has set out an ambition to raise this to 3% of GDP in the next Parliament. The UK's independent deterrent will continue to underpin this increased focus on security.

My plans for Defence Reform recognise the need to maintain deterrence as a priority. As I have said previously, it is not just about how much we spend, but how well it is spent. Defence Reform is about ensuring we are delivering stronger leadership, clearer accountability, faster delivery, less waste and better value for money. That's why the Defence Nuclear Enterprise (DNE) is one of the four areas under new Defence Reform structures, enabling the Chief of Defence Nuclear to operate the ringfenced budget and implement a shift to focussing on delivery and outcomes.

Whilst I have been in office I have had the privilege of visiting DNE sites across the UK. From meeting submariners returning from patrol up in Clyde, to apprentices at Rolls-Royce in Derby or BAE Systems in Barrow-in-Furness, to seeing where we forge the high-grade steel for the nuclear reactor cores at Sheffield Forgemasters, it has been incredible to see first-hand the scale and breadth of support to our nuclear deterrent. Across the country, the enterprise relies on the dedication and skills of tens of thousands of people who provide critical support to our National Endeavour and guarantee our security. And the demand is only set to grow in the coming years – to a predicted workforce demand of over 65,000 by 2030 – as we meet the demands of Dreadnought, AUKUS and infrastructure recapitalisation across our key sites.

Our recapitalisation requires a programme of concerted action to strengthen the enterprise today and into the future. We have recently announced a circa £9 billion Unity contract with Rolls-Royce which will drive investment and productivity. We have appointed a new Chair of the Barrow Delivery Board to foster growth and regeneration in Barrow-in-Furness, the home of UK's submarine building. We are exploring options to re-establish a nuclear fuel cycle for reactor fuel for defence purposes in a way that is fully consistent with the UK's international obligations. And in February of this year, alongside the Department of Energy Security and Net Zero, we announced a wide-ranging review into nuclear regulation that will help unlock growth in both the defence and civil sectors.

The DNE's work is a true National Endeavour. Boosting jobs, fostering growth, strengthening security; it requires a whole of government approach, the support of our industrial partners and strong relationships with local government and academia. National security is a foundation of this government's Plan for Change, with the DNE key to realising this.

The RT Hon John Healey MP, Secretary of State for Defence, May 2025

Introduction

For over 50 years, there has been at least one nuclear-armed ballistic missile submarine patrolling the seas, covertly, at all times. Since April 1969, generations of Royal Navy submariners have upheld this crucial mission – the longest unbroken operation ever delivered by the UK.

The work required to maintain and renew our nuclear deterrent is a true National Endeavour. Day in, day out, right across the country and beyond, thousands of people in the public sector, military and industry are working together to achieve our shared mission: to deliver capabilities, deter the threat and protect the nation.

This is a complex and challenging endeavour involving hundreds of projects and programmes, including some of the largest, most complex and technologically advanced programmes the government has ever undertaken. Together, these cover the maintenance of our in-service capabilities and existing infrastructure, the design and build of our next-generation submarine fleets, the replacement of the UK's nuclear warhead and the recently announced fuels programme.

The Defence Nuclear Enterprise (DNE) is working closely across government on initiatives that will support and strengthen the defence nuclear portfolio. For example, the National Nuclear Strategic Plan for Skills ("Skills Plan") is significantly expanding our workforce to meet the skills

demand across both civil and defence sectors, whilst the Plan for Barrow will revitalise the town of Barrow-in-Furness – the home of nuclear submarine building in the UK.

This document sets out what the DNE has achieved in the last year and outlines our major programmes.

The DNE comprises the organisations that operate, maintain, renew and sustain the UK's nuclear deterrent. It brings together the core organisations of the Defence Nuclear Organisation (DNO) within the Ministry of Defence, the Royal Navy, UK Strategic Command, the Submarine Delivery Agency (SDA), and AWE Nuclear Security Technologies ("AWE").

Our Defence Nuclear policy

Nuclear deterrence is critically important to national security. The government maintains absolute commitment to our nuclear deterrent. That commitment has been realised through the government's 'triple lock' which will assure the delivery of four Dreadnought Class submarines, the maintenance of our Continuous At-Sea Deterrence (CASD) posture, and the delivery of all necessary future upgrades.

The international security environment has continued to deteriorate. The UK faces a new nuclear age with diverse actors and increased complexity compared with the post-Cold War period. Some nuclear-armed states are exhibiting increased assertiveness and investing in modernised, expanded arsenals. Russia is developing new nuclear 'warfighting' systems and has demonstrated irresponsible nuclear signalling designed to deter NATO support during Russia's invasion of Ukraine. China is rapidly expanding and modernising its nuclear arsenal; the Democratic People's Republic of Korea is continuing with its destabilising nuclear weapons programme; and Iran's escalating nuclear activity continues to pose risks.

The new security environment has emphasised the importance of maintaining a capable and credible nuclear deterrent. The government is committed to delivering our nuclear deterrent and investing to sustain and renew our capabilities. This investment will safeguard the UK and NATO beyond the life of our current nuclear capabilities.

Nuclear deterrence is the cornerstone of NATO security, and the independent strategic nuclear forces of the UK contribute significantly to the overall security of the Alliance. We have since 1962 declared the UK's deterrent to the defence of NATO and we will continue to maintain this unshakeable commitment to the Alliance, safeguarding European and Euro-Atlantic security. We will work with Allies to ensure that NATO's nuclear

deterrent capabilities remain safe, secure and effective, adapt to emerging challenges including the growing and diversifying nuclear threats that the Alliance may face, and contribute to the indivisible security of the Alliance.

Our nuclear posture is under continuous review, reflecting the evolving international security environment. Nonetheless, the fundamental purpose of our nuclear weapons is to preserve peace, prevent coercion, and deter aggression.

The security of the UK is our foremost responsibility, and we will retain the nuclear deterrent for as long as the security situation requires. However, we are strongly committed to the long-term goal of a world without nuclear weapons in a transparent, verifiable, and irreversible manner, with undiminished security for all. The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) is the only credible route to nuclear disarmament, and we are committed to its full implementation.

How we deliver Defence Nuclear

The DNE works closely with industry, academia, and partners across government to deliver our programmes. With a supply chain of over 3,000 UK-based businesses and a workforce demand of over 48,000, set to grow to around 65,000 by 2030, the DNE provides considerable economic benefits across the UK. It supports well-paid jobs, investment in science and technology and supports the training and upskilling of our workforce. The work of the DNE, and the upgrades we are making across our sites and Naval bases, generates substantial regional and local economic investment and opportunity, supporting regeneration and sustainability in some of the most deprived areas of the country.

The DNE’s programmes represent a substantial investment into industry; it spent £10.9 billion in financial year 2024/25, with final figures subject to audit, and has a projected spend of over £100 billion through UK suppliers over the next ten years. Recognising the criticality of our nuclear deterrent, the DNE operates under a ring-fenced budget with greater delegated spending authority, enabling faster decision making and a stronger focus on outcomes and delivery.

This work is to maintain CASD, which has been delivered by the Royal Navy since April 1969 under Operation RELENTLESS. This ensures that there is at least one nuclear-powered, nuclear-armed Vanguard Class submarine on patrol at all times, armed with Trident missiles and the UK’s nuclear warhead.

The Royal Navy have been operating the Vanguard Class on CASD patrols since 1993. Ongoing maintenance is provided by Babcock International and Rolls-Royce Submarines Ltd; this work has extended the fleet's operational availability. Built by BAE Systems at their Barrow-in-Furness shipyard, the Vanguard Class will be replaced by the Dreadnought Class, which are also being built in Barrow.

The Trident missile and supporting systems fitted on to the Vanguard Class submarines are manufactured by the US. We have bought title to a number of Trident missiles drawn from a shared pool of assets, as agreed with the US under the 1963 Polaris Sales Agreement (PSA) as amended for Trident in 1982. The Trident missile system is operated independently by both the Royal Navy and the US Navy.

The UK's Trident missiles are fitted with our Mk4A warhead, the design of which is sovereign to the UK and maintained by AWE in Aldermaston. AWE ensures the effectiveness and performance of nuclear warheads and assures the safety and security of our stockpile. They also lead the development of the UK's replacement warhead, Astraea.

CASD is supported by the Astute Class nuclear-powered, conventionally-armed submarines, which also undertake other defence and intelligence tasks, including involvement in maritime task groups.

All classes of UK submarines are powered by nuclear propulsion, the reactors for which are manufactured by Rolls-Royce Submarines Ltd at their Raynesway facility, near Derby. Nuclear propulsion technology is critical to sustaining CASD. It allows our submarines to run for over 20 years without refuelling, meaning they can remain dived to undertake long-range patrols without detection by potential adversaries.

Alongside this, the UK has begun exploring options to re-establish reactor fuel for defence purposes in a way that is fully consistent with the UK's international obligations under the NPT.

Taken together, the DNE's partnerships and programmes provide the capabilities required to maintain CASD as the bedrock of the UK's national security.

The Nuclear Deterrent Triple Lock

This government is unwavering in its commitment to our nuclear deterrent and modernising the UK's nuclear forces, illustrated by the nuclear triple lock, which commits to:

1. The ongoing build of the four Dreadnought Class submarines at Barrow-in-Furness, and continued support for high-quality, high-status apprenticeships and jobs, alongside continued investment in the supply chain across the country.
2. The maintenance of CASD every hour of every day – securing protection for both the UK and NATO Allies.
3. The delivery of all future upgrades needed for the UK's submarines to patrol the waters and keep our country safe.

National Endeavour

Our programmes are among the largest and most complex coordinated by the government. These require the DNE to bring together partners from across government and industry to deliver a National Endeavour to sustain the deterrent for as long as it is needed. As outlined in the DNE's first ever Command Paper, published in March 2024, this involves investing in our infrastructure and capabilities, as well as the people and places, which provide critical support to the National Endeavour.

To drive reform and deliver the capabilities and investment needed, the National Endeavour requires the strengthening of partnerships between the government and industry, with academia and with local government.

The DNE is reliant on sites across the country. From shipbuilding in Barrow to maintenance in Plymouth to deployment for operations from Clyde, supporting growth requires investment in the people and places essential to our national security.

Barrow-in-Furness

Barrow-in-Furness has a long history of shipbuilding dating back to the nineteenth century. BAE Systems' Barrow shipyard remains of critical importance to our national security. It is the only facility in the UK with the infrastructure, site licence, and resources to design and build the UK's nuclear submarines. The Dreadnought and Astute build programmes, and the future SSN-AUKUS build programme, are contributing to significant jobs growth in Barrow, from just under 11,000 in 2023 to 13,500 now employed; this will continue to grow to a projected demand of 16,500 by 2027.

Through our partnership with Westmorland and Furness Council and BAE Systems, the government is continuing to invest in Barrow-in-Furness to

enable and sustain the expansion required to support the DNE. This includes:

- the £200 million Barrow Transformation Fund, which is providing £20 million a year over ten years
- the creation of a £5 million Social Impact Fund to give long-term surety to Barrow's community and voluntary sector

This partnership is already delivering for Barrow-in-Furness:

- expansion of housing provision and the renewal and refurbishment of homes in Barrow. Beyond the existing investment in Marina Village, which will provide over 800 new homes, Homes England has started to map additional opportunities for housing and infrastructure in Barrow
- recruitment campaigns for local Work Coaches, meaning that Barrow's JobCentre Plus is now fully staffed and able to support different groups
- transport improvements, including £23.3 million awarded by the Department for Transport to Westmorland and Furness Council to improve the Grizebeck Bypass
- the Department of Business and Trade have opened a Growth Hub in Barrow town centre, supporting Barrow's businesses

The work facilitated by these funds is overseen by the Barrow Delivery Board, who are working to ensure Barrow's full potential is realised. In February 2025, the government announced that the board will be chaired by former Cabinet Secretary Dr Simon Case.

Investment in Barrow-in-Furness is fundamental for supporting the workforce required to deliver the UK's next generation of submarines. It will bring sustainable growth by strengthening the local economy and encouraging more people to come to live and work in the area, whilst providing greater opportunity for those already living there.

Skills

In August 2023, MOD and the Department for Energy Security and Net Zero (DESNZ) established the Nuclear Skills Taskforce (NSTF). This brought together government, industry and academia from across the civil and defence nuclear sector to address the need for a combined skills uplift.

The Skills Plan, published by the NSTF in May 2024, recognises that a collaborative approach is essential to achieve these goals. The plan will ensure that new entrants can learn the necessary skills to support careers in the nuclear sector and contribute to this critical National Endeavour.

Backed by significant government and industry investment (including BAE Systems, Rolls-Royce Submarines Ltd, Babcock and EDF), the Skills Plan represents a sector-wide commitment to meet nuclear skills growth opportunities.

Through the Skills Plan, our partners have committed to double their intake of new entrants through apprenticeships and graduate programmes, whilst collaboration with the Department for Education and Department for Science, Innovation and Technology will quadruple specialist science and nuclear fission doctorates. Additionally, the Skills Plan seeks to reduce nuclear sector attrition rates through improvements in retention, recognition and mobility across the sector. This will drive an improved workforce experience.

The Skills Plan is generating success, with nearly 4,000 early career starters projected to have entered the sector in 2024/25. An additional 20 nuclear fission PhD students have been funded as a direct result of the Nuclear Skills Plan, supporting a pipeline of future subject matter experts. As a result of the Destination Nuclear Campaign, there has been a 25% growth in public awareness of nuclear career opportunities since January 2024 and over 58% of website users have transitioned through to the Destination Nuclear Careers Portal.

We have launched three Regional Hubs in the North West, South West and the Midlands, with plans to deliver additional working groups in Wales and Scotland. These groups are working to identify local solutions to deliver Skills Plan targets. The government is working with local employers and stakeholders to break down barriers to opportunity by widening access to education and careers in the nuclear sector.

The Skills Plan is fostering economic growth and providing greater opportunity and access to careers in defence nuclear nationwide. It is vital to the National Endeavour and ensuring the success of the DNE’s programmes.

Nuclear Regulatory Review

In February 2025, the government announced that it would be convening a specialist taskforce to lead an independent review into nuclear regulation. Supported by both the MOD and DESNZ, the review has a broad scope that includes legislation, regulator scope and resource capacity, regulatory outcomes, nuclear sector culture and processes, and innovation and new nuclear. It represents a key pillar of the National Endeavour, demonstrating the benefits of cross-government working to deliver growth across the country.

In April 2025, John Fingleton CBE was appointed to head the taskforce, bringing with him experience from his time as the head of the Office of Fair Trading and the Board of UK Research and Innovation. He will lead a panel of experts over the course of the review.

The review will uphold the highest standards in security and safety, whilst promoting efficiency in nuclear projects to enable growth across the UK.

Nuclear Fuels Programme

Announced in November, the UK is exploring options to re-establish a nuclear fuel cycle for reactor fuel for defence purposes. The UK takes its nuclear responsibilities and obligations seriously and this fuel production cycle will be fully consistent with the UK's international obligations, including the NPT. It will also be fully consistent with the UK's voluntary moratorium on the production of fissile material for nuclear weapons or other nuclear explosive devices.

The UK will continue to maintain the highest standards of safeguarding of civil nuclear materials, ensuring a separation from defence materials and complying with our obligations under the UK's Voluntary Offer Agreement with the International Atomic Energy Agency.

Our Submarines

The UK's submarine fleet is composed of four Vanguard Class and five Astute, with a further two Astute Class in build. The Vanguard Class provides CASD every minute of every day.

The DNE is overseeing the build of the Dreadnought Class and the remaining two Astute Class submarines. All UK submarines are manufactured by BAE Systems in Barrow. In October 2024, there was a fire in the Devonshire Dock Hall at BAE Systems' submarine yard. The circumstances of the fire are still being investigated.

The nuclear reactor plant and its in-service support are provided by Rolls-Royce Submarines Ltd at its Raynesway facility.

Through the AUKUS partnership with Australia and the US, we are developing a new class of attack submarine to replace Astute: the SSN-AUKUS.

Dreadnought

Supported by a Parliamentary vote in 2016, the Dreadnought Programme will deliver the four Dreadnought Class submarines to replace the Vanguard Class. They will be the largest, most advanced submarines ever operated by the Royal Navy. Currently under construction at Barrow, the design incorporates a range of technologically advanced electronic systems, sensors and tactical weapons, as well as housing the Trident missile system.

Dreadnought represents a substantial investment in British industry. Delivered through the Dreadnought Alliance, a partnership which brings together MOD, BAE Systems and Rolls-Royce Submarine Ltd under a joint management team, the Dreadnought Programme utilises a supply chain of hundreds of companies and supports thousands of jobs across the UK. The programme remains on track to deliver Boat 1 into service in the early 2030s.

Delivery Phase 3, announced in May 2022, has continued construction of the first three submarines in the class.

The steel cutting ceremony for Boat 3 took place in February 2023, with its long-lead items secured and received in Barrow. Work continues with the procurement of long-lead items and materials for Boat 4.

The keel laying for Boat 1 took place in March 2025, marking an important milestone in its construction.

The previous government estimate was the Dreadnought build programme would likely cost £41 billion (£31 billion plus £10 billion contingency). As of March 2024, £17.4 billion, has been spent. The current forecast to completion remains within this envelope, with £3.37 billion of contingency being consumed to date, and the remainder allocated to future years. The programme continues to face significant pressures and associated risks given the complexity of this mega project and the wider economic environment.

Astute

First introduced in 2014, the Astute Class, equipped with Tomahawk missiles and Spearfish torpedoes, are at the forefront of underwater warfare and reflect the UK’s investments in conventional forces. Replacing the

Trafalgar Class, they are capable of detecting, tracking and destroying enemy forces at sea, as well as covertly striking land targets.

Alongside their role supporting CASD, they are also involved in protecting maritime task groups, supporting special forces and providing global strategic intelligence and support to UK, NATO and coalition operations.

The Astute Programme is valued at £12.2 billion. Five of seven Astute Class submarines have been delivered to the Royal Navy, with Boat 5 – HMS Anson – having completed sea trials in April 2024. Boat 6 was launched in October 2024 in preparation for the final stages of build and commissioning, and construction on Boat 7 continues.

SSN-AUKUS

SSN-AUKUS is being developed through the AUKUS partnership with the US and Australia, based on a British design. The programme will deliver a new class of nuclear-powered, conventionally armed attack submarine for the Royal Navy to replace the Astute Class. The Royal Australian Navy will also operate their own fleet of SSN-AUKUS submarines.

Construction of the UK's submarines will take place at BAE Systems' Barrow shipyard. The next generation of nuclear reactors for all SSN-AUKUS submarines – including Australia's – will be built at Rolls-Royce Submarines Ltd's Raynesway site. The UK will also supply key components to Australia's programme whilst they develop their industrial capacity.

Recognising the importance of British industry to the development of this capability, Australia is investing £2.4 billion into Rolls-Royce Submarine Ltd infrastructure and to share the costs on SSN-AUKUS submarine design.

The programme entered the Detailed Design and Long Lead phase (D2L2) in March 2023, working with BAE Systems, Rolls-Royce Submarines Ltd and Babcock. Alongside D2L2, infrastructure improvements are underway at Barrow and Raynesway to meet future submarine build programme requirements.

Warhead

One of the DNE's core responsibilities is to ensure that the UK maintains a safe, secure, reliable and sovereign warhead stockpile. With a 9,500-strong workforce – including 3,800 scientists and engineers – AWE in Aldermaston

is the only organisation in the UK which has the technical knowledge and resources to carry out this responsibility.

In 2023, the UK completed an update of its nuclear warhead, transitioning from the Mk4 to the Mk4A by replacing non-nuclear components. The Mk4 warheads are being disassembled and their component elements reused, recycled or safely disposed of.

In February 2020, the UK committed to replacing its warhead to ensure an effective deterrent for as long as required. The A21/Mk7 – or Astraea – warhead will underpin CASD throughout the commissioned life of the Dreadnought Class.

As we continue to support the entry into force of the Comprehensive Nuclear-Test-Ban Treaty (CTBT), Astraea will be the first UK warhead developed in an era where we no longer test our nuclear weapons underground. Instead, the UK will use its expertise and investment in modelling and simulation, supercomputing, materials science, hydrodynamics, shock and laser physics, including at the shared UK-France EPURE facility near Dijon. This work assures the effectiveness and safety of our respective warhead programmes.

In October 2024, AWE successfully completed the first Hydrodynamics Capability Demonstration Trial. These trials are required in advance of the design phase and product development of the Astraea A21/Mk7 warhead. Accurate physics models have been developed to understand how materials behave in warhead-relevant contexts. This ensures that the nuclear deterrent is reliable whilst meeting our CTBT commitments. We reviewed our CTBT methodology last year and are using it to drive our research and development strategies.

Missile

The Trident missile system is designed and manufactured in the United States. The procurement of the Trident system by the UK is enabled through the 1963 PSA, as amended for Trident.

The UK buys title to an agreed number of a shared stock of Trident missiles which are maintained at the Kings Bay Submarine Base, Georgia, where they are loaded into UK SSBNs.

The UK-manufactured warheads are fitted to the missiles at His Majesty’s Naval Base (HMNB) Clyde in Scotland. These arrangements will continue for the Dreadnought Class when they enter service.

International Collaboration

Our international partnerships are fundamental to supporting the UK's nuclear deterrence.

The United States of America

We maintain a close bilateral nuclear relationship with the US. Nuclear cooperation between the UK and US is underpinned by the 1958 Mutual Defense Agreement (MDA) and the PSA, enhancing transatlantic security and bringing benefit to both countries.

The MDA enables cooperation between the US and UK on atomic energy for mutual defence purposes, including the exchange of nuclear materials, technology and information as well as the transfer of non-nuclear components.

Until 2024, some provisions in the MDA required renewal on a ten-yearly basis. In July 2024, amendments to the MDA were presented to Parliament and the US Congress proposing: addressing obsolete language; ensuring future flexibility; clarifying types of information to be exchanged; and, most notably, the removal of the ten yearly renewal requirement.

As part of scrutiny under the Constitutional Reform and Governance Act 2010, the International Agreements Committee of the House of Lords (IAC) considered and reported on the renewal of the MDA during October 2024. In November 2024, the exchange of diplomatic notes was completed between the UK and US confirming that the amended treaty had entered into force.

As part of the report published by the IAC, it has requested that with the removal of the ten-yearly renewal provisions, the government commit to providing an update to Parliament on the progress and operation of the MDA every ten years. To allow Parliament to consider the wider context of the UK's nuclear deterrent and US relationship, the government has committed to providing this update through future iterations of this annual update to Parliament.

France

The UK maintains a high level of cooperation with France through the TEUTATES Treaty. Signed in 2010 as part of the Lancaster House Agreements, it has facilitated the construction of a shared hydrodynamic facility – EPURE – near Dijon, France. Whilst the UK and France maintain operational independence, the facility is jointly managed, with both nations performing sophisticated experiments to inform their modelling of the performance, safety and reliability of their nuclear weapons to enable assurance of the warhead without underground testing. Reflecting the UK's CTBT commitments, EPURE will play an important role in the Astraea programme.

Through TEUTATES, in November 2024 the programme fired the first X-rays by the UK-supplied Induction Voltage Adder machine at EPURE. The UK and France have been working as one team to accelerate delivery, and this marked an important Treaty milestone.

AUKUS

The AUKUS trilateral partnership between Australia, the UK and the US is one of the most strategically important capability collaborations in decades. The partnership reinforces NATO, whilst bolstering Indo-Pacific and Euro-Atlantic security and prosperity.

AUKUS is supporting more unified defence and industrial collaboration, better information and technology sharing and greater resilience. It will develop joint capabilities including the SSN-AUKUS submarines to be deployed by the UK and Australia alongside advanced conventional (non-nuclear) capabilities.

The partnership will develop Australia's industrial base, engineering expertise and at-sea capability, and represents a multi-billion-pound investment into UK industry as well as enhancements to the US SSN industrial base.

Pillar 1 of AUKUS – the delivery of Australia's conventionally armed, nuclear-powered submarine capability, while setting the highest non-proliferation standard – saw a series of developments in 2024. These included:

- the announcement in March 2024 that the Australian shipbuilder of SSN-AUKUS would be a collaborative arrangement between BAE Systems and ASC Pty Ltd
- the signing in August 2024 of a new treaty-level agreement which will enable AUKUS partners to continue sharing submarine naval nuclear

propulsion information, and allow the UK and US to transfer material and equipment to Australia for use in nuclear-powered submarines

- in September 2024, the Defence Secretary hosted the first AUKUS Defence Ministerial Meeting in the UK, where he announced the start of negotiations on a new treaty between the UK and Australia. This treaty will govern bilateral co-operation under AUKUS Pillar 1, with a focus on the delivery of SSN-AUKUS.

Infrastructure

The DNE is investing in infrastructure across the breadth of the country. These multi-billion-pound, multi-decade programmes will support thousands of jobs, requiring specialist skills across construction, engineering, science and supporting services.

To do this, we are investing in our industry partners, providing them with the certainty and the resources to deliver the next generation of capabilities to support CASD and the wider submarine enterprise.

HMNB Clyde

HMNB Clyde is the largest military base in Scotland, employing some 6,000 people in military and civilian roles. Sitting across two sites, Clyde is home to the UK's Submarine Service at Faslane and Royal Naval Armaments Depot (RNAD) Coulport.

The DNE has embarked on a 40-year programme of infrastructure developments. The Establishment Management Plan will provide additional operational maintenance facilities and berthing, alongside training and welfare facilities and crew accommodation. This investment will support the arrival of the Dreadnought and SSN-AUKUS classes.

HMNB Devonport

The largest naval support site in Western Europe, HMNB Devonport employs close to 12,000 people across a wide range of outputs for ships and submarines. The base is where our in-service submarines are maintained, modernised and refitted, and it plays a role in submarine disposals.

The base is undergoing substantial improvements to its infrastructure over the next decade. Developments include the modernisation of docks, equipment and supporting infrastructure. The DNE is constructing a new non-tidal maintenance berth, delivering refurbished dry docks for Astute Class deep maintenance and future-proofing the naval base for the arrival of Dreadnought and SSN-AUKUS. This sits alongside a wider programme of investment in the disposals process for decommissioned submarines.

Rosyth Royal Dockyard

Whilst Rosyth Dockyard is better known for its build, maintenance and refit support to the surface fleet, we are also investing in further submarine dismantling to address submarines that have been laid up awaiting disposal. Additional infrastructure investments for Rosyth are under consideration with a view to how they might offer further support to submarine flotilla.

Rosyth has been identified as the only site in the UK where a contingent docking facility could be commissioned for HMS Dreadnought, should it be required during its sea trial period. Work is ongoing with the dockyard owners and in consultation with the Scottish government and the wider stakeholders to meet that requirement.

AWE Nuclear Security Technologies

The DNO and AWE are taking a strategic approach to investment and infrastructure development at AWE’s sites in Aldermaston and Burghfield and at RNAD Coulport, to support the requirements of the current warhead and Astraea, the UK’s next warhead, and to ensure the UK can maintain a safe, secure and resilient warhead capability.

In the last decade, AWE has completed several projects including the High Explosive Fabrication Facility. These new facilities provide modern, safe and secure manufacturing capability to support the UK’s warhead stockpile and form part of the transformation of AWE’s infrastructure, comprising many hundreds of projects of all sizes.

The Ministry of Defence is responsible for delivering a number of infrastructure programmes at AWE, including the continued investment in the completion of MENSA and the construction of the Future Materials Campus (FMC). MENSA will provide a new facility for warhead assembly and disassembly at Burghfield, replacing the current facilities in due course. The FMC programme is a large capital programme at Aldermaston that will

replace existing nuclear facilities for the manufacture and storage of nuclear materials, improve science and analysis capabilities and invest in processes to recover used materials.

The programme will create highly skilled jobs in science, technology and construction both locally and across the UK supply chain. The programme is developing a value for money model that utilises modern methods of construction and ensures flexibility to meet future demands of the deterrent programmes. Initial work has also commenced at RNAD Coulport for the introduction of new facilities to support Astraea.

Submarine disposal and liability management

The DNE works with regulatory bodies to ensure a safe, secure and environmentally responsible approach for the disposal of the UK's decommissioned submarines and nuclear liabilities. Nuclear decommissioning is a constantly evolving technological field, in which advances can fundamentally change costs and timelines. At present, the UK's nuclear liabilities, those being nuclear materials and the facilities and equipment exposed to them, are valued at £9 billion.

Since 1980, 23 nuclear powered submarines have left service. 16 boats (four of which have been defueled) are stored at Devonport Dockyard with the remaining seven (defueled) at Rosyth Dockyard.

In July 2023, the Submarine Dismantling Project achieved a major milestone with Swiftsure, which entered the final phase of the disposals cycle. The programme remains on track to complete her fin removal in June 2025, bringing Swiftsure closer to full dismantlement by the end of 2026. Once completed, it is estimated that 90% of the submarine can be recycled. The boat will act as a demonstrator submarine with the lessons learned applied to future dismantling of submarines designed with a Pressurised Water Reactor 1 (PWR1) reactor, to optimise the process.

The DNE is also investing in regenerating the infrastructure in Devonport Dockyard to re-establish a modern and safe PWR1 defueling capability and restart defueling of PWR1 submarines. Once complete, this investment in infrastructure, alongside the development of wider Devonport facilities, will free up valuable dockyard space by reducing the number of submarines held in storage, decreasing the costs associated with storage and allowing us to accelerate the disposals programme. This is a complex project, requiring the highest levels of safety, regulatory oversight and renewal of the skills base. Therefore, the DNE does not anticipate for PWR1 defuel to

commence until 2026, though we continue to examine options to accelerate the delivery schedule once this work has recommenced.

The DNE has also established the Submarine Disposal Capability project to investigate and implement an enduring capability for the safe disposal of current and future decommissioned submarines. Currently in its concept phase, the project will ensure the appropriate infrastructure and suitably qualified and experienced personnel are in place to safely decommission, defuel and dismantle PWR2 submarines onward.

We are committed to the safe management of our nuclear materials and reusing special nuclear materials appropriately. Over the course of the FMC and other AWE infrastructure programmes, we will establish materials recycling plants to clean the strategic stockpile of materials. Additional low level and intermediate level waste is managed through interactions and continued building of collaboration on waste management and disposal with the Nuclear Decommissioning Authority and their wider supply chain for best practice, learning, efficiencies and economies of scale.